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LACHRYMAL CONJUNCTIVITIS AND SOME OF THE OTHER INJURIOUS EFFECTS OF RETENTION OF THE TEARS

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LACHRYMAL CONJUNCTIVITIS AND SOME OF THE OTHER INJURIOUS EFFECTS OF RETENTION OF THE TEARS.

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The retention of the tears in contact with the tissues of the eye causes disease of the conjunctiva, cornea, and lids, and aggravates and indefinitely prolongs existing diseases of those parts, although these diseases themselves may have caused the stillicidium. Thus cause and consequence exchange places, but the conjunctivitis, keratitis, or blepharitis *cannot be cured* while the stillicidium persists.

A strange outgrowth of the theory of the older authors, that inflammation of the tear-passages depends upon a specific quality of the lachrymal secretion, appears in the motto which Martini in 1843 prefixed to his work *On the Influence of the Tears on the Human Eye*: Des Auges tödtlichster Feind ist die Thränenflüssigkeit (the deadliest enemy of the human eye is the lachrymal secretion): (*Schirmer, Graefe-Saemisch Handbuch*, vii. 1, p. 33). More moderately and more correctly Mackenzie says: "The tears are at all times an irritating secretion. The conjunctiva is instantly reddened when they flow; and although we were to grant that this was consentaneous with determination of blood to the lachrymal gland, preceding the discharge, yet we observe that if the tears are so profuse as to run over the cheek, the skin with which they come into frequent contact becomes inflamed and excoriated." (*Dis. of the Eye*, Phila., 1855, p. 149.)

Saemisch says that the hyperæmia of the conjunctiva which is caused by blepharitis or disturbances of the tear-conducting apparatus, yields spontaneously as soon as these pathological conditions are removed. (*Graefe-Saemisch Handbuch*, iv. 1, 9.) He also speaks of a "*circulus vitiosus*," the members of which are: catarrh of the conjunctiva, blepharitis angularis, dermatitis angularis, eversion of the lower lachrymal puncta, epiphora, lodgment of fluids in the conjunctival sac, *catarrh of the conjunctiva*. From these follow blepharitis ulcerosa, ectropium, keratitis. (p. 14.)

The stillicidium that is caused by eversion of the lower punctum causes irritation of the skin of the lids, loss of tissue, and shrinking. (p. 62.)

Schirmer speaks of "conjunctivitis lacrymalis *nach* Galezowski," the conjunctiva bulbi, plica semilunaris and caruncula lacrymalis being inflamed, either from inflammation extending from the tear-passages, or through the special irritation caused by the mucus which escapes from the puncta, or by the simple retention of the tears. A further result of the constant wetting of the edges of the lids by the tears is the almost unending blepharitis ciliaris. The epiphora becomes permanent and dacryocystitis and blepharitis stand in an evil relation to the overflow of the tears. (*Graefe-Saemisch Handbuch*, vii. 1, p. 23.) He expresses the opinion that the conjunctivitis and blepharitis that occur in the course of dacryocystitis are only the results of the presence of the tears, and of the mucus which escapes from the sac by the puncta. (p. 32.)

Schweigger speaks of chronic conjunctivitis and blepharitis as secondary inflammatory processes caused by strictures of the nasal duct. (*Handbook of Ophthalmology*. Translated by Farley. Phila., 1878, p. 214.) Severe inflammation of the edges of the lids may occur as a consequence of other diseases which have caused long-continued hyperæmia of the conjunctiva and abnormal retention of the lachrymal secretions. (p. 218.) He also speaks of a "vicious circle." "Especially is the tear-passage to be kept open, since a perpetual dripping of the tears has a most hurtful influence." (p. 220.) "Among the local causes which induce or maintain conjunctivitis are strictures of the nasal duct," &c. (p. 255.)

Wells, in speaking of stillicidium lacrymarum and its results, says that if the true nature of this irritability of the eye and of the lachrymation is overlooked, very obstinate and intractable inflammation of the edges of the lids and of the conjunctiva may ensue, which sets defiance to every form of collyrium or topical application, but readily yields if the impediment in the lachrymal apparatus is removed, and the stillicidium cured. The obstruction to the efflux of the tears may be situated at any point of the lachrymal canal, in the puncta, the canaliculi, the sac, or the nasal duct. (*Diseases of the Eye*, 2d ed., 1870, p. 653.)

The first special paper on this subject is by Galezowski (*Mal. des Yeux*, Paris, 1872, p. 157), to whom we are indebted for the term "Lachrymal Conjunctivitis." (See also *Gaz. des Hôpitaux*, 1868, p. 430, and Fitzgerald, *Dublin Jour. Med. Science*, Nov., 1869, p. 675.) I have not time to reproduce this paper here, though it well deserves our fullest consideration.

Notwithstanding the references to the pernicious effects of the tears

upon the conjunctiva, &c., which I have been thus able to make, the importance of these effects and their recognition and proper treatment receive less attention than should be given to them. In Vienna, at the clinic of Prof. Stellwag, I saw this matter neglected; and in his great work on the Eye, 4th Am. Ed., 1873, under Catarrhal Conjunctivitis, p. 373, the effect upon the conjunctiva of the constant presence and running over of the tears seems inadequately referred to. In the chapter on Trachoma, p. 410, we are told that eversion of the lower lid, which often occurs, "by continuous dropping of the tears, leads to erythematous inflammations and excoriations of the lids and cheeks, and subsequently to their shrinkage; and thus the improper position of the lid is increased and at the same time the inflammation in the conjunctiva and cartilage maintained, and further degeneration favored." This reference is enough, when carefully sought for and freely interpreted, to prevent the case from going by default; and so perhaps is the clause under the head of Treatment, p. 410, calling for the "removal or keeping away of all injurious influences which may possibly increase or maintain the process." On p. 501, "Blennorrhœa of the Lachrymal Passages," we are told that "the frequent combination of dacryocystoblennorrhœa with catarrhal conjunctivitis and blepharitis ciliaris is worthy of mention. These are often secondary, from the contact of the products from the lachrymal passages with the conjunctiva, and the opportunity for the excessive formation of crusts on the edges of the lids."

Prof. Arlt, in his chapters on operations (Graefe-Saemisch Handbuch, B. III.) describes Bowman's method of slitting the canaliculi, giving certain indications for its performance, but says no word to indicate that the relief of conjunctivitis or blepharitis is among these indications.*

In Zurich I saw the connection between stillicidium and chronic conjunctivitis disregarded.

At Moorfields Ophthalmic Hospital, London, a case of chronic conjunctivitis with everted puncta and wet, soaked, irritated edges of the lids, presented himself to one of the attending surgeons—a man

* May not this be considered the great defect of this noble work? *Each* author should have given the operative as well as the medical treatment of the pathological conditions he described. Another defect almost equally great, in another direction, is that there is no index either for each special subject or for the whole work.

of world-wide reputation outside of ophthalmology—who said, in reply to a question, that the everted puncta and the stillicidium were caused by the conjunctivitis, and had nothing to do with keeping it up. He forgot the vicious circle, for it would be the height of presumption to say that he did not apprehend it.

As the retention of the tears in contact with the conjunctiva, &c., is the cause of the trouble under consideration, the diagnosis resolves itself into determining whether the tears are or are not carried off sufficiently freely or at all, and whether, in any given case where the tears remain temporarily in contact with the tissues, they are exciting a prejudicial action. The diagnosis of stillicidium is sufficiently well understood to require no special elucidation here—time and space are too limited. In many cases the wet edges of the lids at once attract the surgeon's notice ; often, however, this condition is so slight that one may feel doubt as to the existence of stillicidium. Wells calls attention to the important fact that the punctum may be at the apex of a nipple-like prominence, so that the entrance of the tears is rendered difficult. (Op. cit., p. 654.)

In considering the matter of treatment, it is well to bear in mind the dictum of Schirmer, that "wounds of the posterior wall of the canaliculus, whilst the other parts are undisturbed, have not the slightest evil results, as is shown by the daily performance of the operation for slitting them." (Op. cit., p. 23.) Therefore, when, as sometimes happens, there is doubt as to the actual condition, it is well to give the patient the benefit of a carefully performed operation. At the same time it is not to be forgotten that the obstruction may be of a temporary character and may yield to the usual treatment of conjunctivitis. The writer recalls a case of dacryocystitis, in a child, that yielded readily to a weak alum solution as a collyrium. But in the very large proportion of cases the observant practitioner will at once perceive the necessity for an operation.

It is not the purpose of this paper to discuss cases that require the use of the sound to dilate strictures of the nasal duct. These are not likely to be overlooked. Nor do I wish to consider the treatment of strictures of the canaliculi, but only faults of the puncta. For this the full slit as made by Bowman is not necessary. It is only needful to obtain an *enlarged* punctum in a more favorable position. To do this when there is no or but slight displacement of the punctum (the inferior is now under consideration, as it is seldom necessary to interfere with the upper) the edge of the lid is put on the stretch, as for Bowman's operation, one of the points of a delicate

pair of scissors is introduced into the canaliculus at right angles to the edge of the lid, carried as far in this direction as possible, and the tissue between the blades divided by one quick stroke. In the depth of the wound the beginning of the horizontal part of the canaliculus can be seen. The fluid in the lacus lacrymalis now lies in contact with the slit thus made, and if the canaliculis is pervious the tears are carried into the sac. This is a modification of Bowman's operation as done with the scissors, and might well receive the name *Bowman minor*.

The tendency of the edges of the incision to unite is not greater than in the ordinary operation when done as a preliminary to the use of the sound. The usual result is an enlargement of the punctum *towards* the reflected portion of the conjunctiva of half a line to a line.

When there is much eversion of the punctum or tumefaction of the conjunctiva, the operation is the same, with the addition of the removal of a piece of the conjunctiva somewhat as proposed by Mr. Critchett in his Lectures on the Diseases of the Lachrymal Apparatus, *Lancet*, 1863, Vol. II., p. 697; (referred to by Wells, op. cit., p. 657), as follows: "Occasionally, however, I have found that the eversion is so considerable, owing to the thickness and swollen condition of the lower lid and its inner lining, that even the canal when laid open remains everted and the tears do not reach it, but still flow over. Under these circumstances I have been in the habit of seizing a portion of the posterior wall of the canal and snipping it out with scissors, thus effecting the treble objects of drawing the canal more inward toward the caruncle, of forming a reservoir into which the tears may run, and of preventing any union of the parts." When the fault is in the punctum and not in the canaliculus, the complete slitting of the latter is not necessary. The modification proposed by Mr. Critchett shares the same condemnation; but a modification of the latter, called, for brevity, at the Brooklyn Eye and Ear Hospital (where it has been long in use, author's name not known), *Critchett minor*, is believed to fill, in a very large proportion of cases, all the indications required. It consists of the operation called Bowman minor, with the addition that by means of a fine-toothed forceps the conjunctiva at the *end* of the perpendicular incision is seized and a circular or triangular piece is cut out with scissors from the inner surface of the lid towards the cul-de-sac. This piece may vary from one line to three or four lines in diameter. Thus we obtain the treble results (in Mr. Critchett's words) "of

drawing the canal" (the new and enlarged punctum rather) "more inward toward the caruncle, of forming a reservoir into which the tears may run, and of preventing any union of the parts." * In addition, it is a good operation for the cure of eversion. The writer has seen quite decided correction of the position of the margin of the lid thus obtained.

This is, in the strictest sense of the word, an extemporaneous operation, can be done with four cuts of the scissors, and requires no anæsthetic in the writer's practice. He is in the habit of doing it in the consulting-room without making any preliminary explanation to the patient, who is, as it were, taken by surprise, and whose resistance is *anticipated, not invited.*

In Jones' *Ophthalmic Medicine and Surgery*, Am. Edition, Phil., 1863, p. 399, the editor mentions an operation "recently proposed" by Mr. Haynes Walton, for the relief of eversion of the punctum when caused by a slight ectropium: "With a very small scalpel and a fine cross-tooth pair of forceps, a bit of the conjunctiva just posterior to the canaliculus, and from over the entire thickness (?) of the cartilage, is dissected off. The wound is left to cicatrize, and the manner in which the punctum is righted is surprising.—ED."

For more than six years the diagnosis "Lachrymal conjunctivitis (Galezowski)" has been made at the Brooklyn Eye and Ear Hospital.

The following illustrative cases—two from private, the others from hospital practice—are appended:

CASE I.—The Rev. D. R. B., in good general condition, consulted me on Dec. 13, 1870. He had long been troubled by weakness of his eyes, for which during the preceding year he had consulted Dr. Liebreich in Paris, who prescribed glasses for astigmatism and gave him a lotion and an ointment; but there was no improvement. I found the lids swollen, with incrustations along the edges, and swelling—papillary engorgement—of the palpebral, slight injection of the ocular conjunctiva. The inferior lachrymal punctum of the left eye was somewhat everted, in consequence of the swollen condition of the conjunctiva, causing stillicidium, though the punctum and canaliculus were open. In order to allow the tears to pass off by the natural channel, I enlarged the punctum downward and removed a small triangle of conjunctiva from the inner surface of the lid (Critchett minor), then

* See remarks on this subject by Mr. J. F. Streatfield, in the Royal Ophthalmic Hosp. Reports, Vol. I., p. 103.

applied argent nit. mit. to the conjunctiva, and prescribed a chloride of zinc wash and diluted citrine ointment. He returned in four days, reporting his condition very much improved ; could use his eyes much more freely than before. Two weeks later he was not so well—the stillicidium had returned in consequence of the closure of the small opening made ; the piece removed had not been large enough. The operation was therefore repeated and a larger piece of conjunctiva removed. Arg. nit. mit. lightly applied.

He returned Feb. 11, 1871, reporting the left eye better than it had been for a long time. As the right eye was affected in a similar manner, though in a less degree, I also removed a triangular piece of conjunctiva from the lower lid. The use of the wash and ointment was continued.

The result was entire relief for years of the inflammation of the eyelids; he was able to use his eyes with ease. In Feb., 1877, during my absence, he consulted Dr. A. Mathewson, whose memorandum, kindly furnished me, states that his lids trouble him at intervals after use.

CASE II.—W. A. K., aged about eight years, consulted me in 1876 for conjunctival disease, for which he had been treated unsuccessfully by a New York City oculist. My notes state that the conjunctiva of the lids was roughened, though not fairly granular, and that there were some phlyctenula-like vascularities near the cornea. (See Galezowski, op. cit., p. 158). Atropine solution was instilled, a borax and camphor wash and a camphor ointment (camphor ice), prescribed. Under this treatment he improved. May 18th of this year he came to me again. There was stillicidium, the inferior puncta being slightly everted ; the palpebral conjunctiva was injected and thickened from papillary engorgement ; there were the same phlyctenula-like vascularities that were before noted ; each cornea was clear. I considered the case one of lachrymal conjunctivitis, in which, the cause continuing to act, the treatment adopted had only been followed by temporary relief. The puncta and canaliculi were therefore slit, the latter for about one line only (Bowman minor). No applications were made ; a wash containing borax and tannin was prescribed ; the openings made closed, so that it was necessary to repeat them, after which decided improvement resulted, which was increased by a slight use of blue-stone.

CASE III.—Mary H., aged 30. Brooklyn Eye and Ear Hospital, 16752, 1878. Lachrymal conjunctivitis. Her eyes have been sore for twelve years ; have had treatment at different times ; they are

now often very sensitive to light, the edges of the lids are reddened and sodden-looking at outer and inner angles, conjunctival surfaces of lids look as if they had been granular but now are quite smooth, corneæ very slightly nebulous. The slightly everted puncta failed entirely to carry away the tears, and as a consequence the inflammation persisted. The inferior puncta were cut and pieces of conjunctiva removed from the inner surfaces of the lower lids (Critchett minor), so as to secure free carrying off of the tears. Marked improvement followed.

CASE IV.—F. (Case 7853, Brooklyn E. and E. Hospital) had been operated on by Graefe's method for cataract, O. S. Feb., O. D. April, 1878. On July 2d, finding that there was much annoyance from stillicidium, O. D., causing conjunctival irritation, I did a Critchett minor, which was followed by much improvement, and this still continues. The lids were dry the next day.

CASE V.—J. L., aged 45, March 28, 1872 (Case 5191, E. and E. Hospital). Lachrymal conjunctivitis. His eyes have watered for years. Bowman's operation was done on each lower lid and an alum wash given. Three months later he said that his eyes were more comfortable than they had been for years. The tears ran down through the ducts.

CASE VI.—E. and E. Hospital, 9677, Jan'y 16, 1875. Lachrymal conjunctivitis, caused by everted puncta. Critchett minor was done, removing pieces of conjunctiva from lower lids, and a sulphate of zinc wash given. Fifteen days later there was much improvement visible.

CASE VII.—E. and E. Hospital, 16385, April 2, 1878. There is eversion of the inferior puncta from blepharitis, which is kept up by the continual soaking of the tears. Critchett minor on both sides was performed, a ten gr. sol. arg. nit. applied, and a borax wash given for frequent use. April 27.—The eyes are dry, the tears pass down by the natural channels. The use of the sol. arg. nit. was continued after the operation.

CASE VIII.—E. and E. Hospital, 16554, April 23, 1878. Trachoma both eyes. O. D. has a central ulcer of the cornea. The edges of lids are constantly bathed in the lachrymal secretion, which cannot be carried away on account of the faulty position of the inferior puncta. This aggravates all the other symptoms. To relieve it did Critchett's operation on both lower lids, and gave a sulphate of zinc wash; April 25th, improvement marked; tears go down by ducts; ten gr. sol. arg. nit. July 20.—O. D., ulcer perforated some

days ago ; patient attended irregularly ; O. S. granulations much improved. Both eyes are dry, the tears passing down by the nasal ducts.

It may not be out of place in conclusion to say a few words on what appears to the writer the best method of performing Bowman's operation. The most recent English work on the diseases of the eye, by Mr. Carter, appeared in 1875. He gives the following description (p. 221) : "The surgeon carries the knife horizontally along the canaliculus, *cutting edge upwards* (italics mine), the knife is raised from the horizontal to the perpendicular position, and it divides the whole length of the canaliculus during the movement."

In Mr. Wells' work on the eye we find the statement that the knife should be run "with its *sharp edge upwards* (italics mine), along and quite up to the extremity of the canaliculus, and the latter be divided along its whole course by lifting the knife somewhat from heel to point." (2d Ed., 1870, p. 655).

I am not able to refer to Mr. Bowman's own description of his operation, but it may fairly be supposed that Mr. Wells, one of the surgeons of the hospital in which Mr. Bowman has done so much and so excellent work, gives a correct description of the operation. On the other hand, Prof. Arlt says that the cutting edge of the knife or scissors must be so directed that the wound shall gape up or down and *backwards*. (Graefe-Saemisch Handbuch, iii. 480.)

Wecker says the edge of the knife should always be directed *towards the globe of the eye* (italics mine) so that the artificial opening may present in the same direction. (Mal. des Yeux, 2d Ed., 1867, T. i., p. 867).

The writer has been led by observation, and not by either of these authorities, to adopt the following method of operation on the inferior canaliculus : The lid is drawn downward and outward as fully as possible, the probe-point of the knife is then introduced perpendicularly into the punctum with *the cutting edge of the knife turned towards the ball ;* when the knife takes the horizontal position the edge is turned *still more towards the inferior cul-de-sac*, and in this position is pushed along the canal as far as desired, and is then made to cut out by moving the handle in an inward slightly upward direction. The result is a curved incision, the convexity of which is directed downward, which presents its canal to the lacus lacrymalis. The advantages of the method are that the tears are well carrried off, the wound is well hidden behind the margin of the lid, it serves well for probing, and

has, perhaps in consequence of the free movement of one lip upon the other, less tendency to unite than the ordinary incision made with the "sharp edge upwards." Except that it has no power to correct an eversion, however slight, it has the advantages claimed by Mr. Critchett for his modification of Mr. Bowman's operation.

The writer is aware that this paper contains very little that may not be found already in print, but still he feels that the subject is of so great importance that there is no need to apologize for its presentation.